

REMARKS

The Examiner objected to the drawings, since the previously introduced to the claim 9 limitation, “...the chamber is shaped as a columnar through hole penetrating from the first opening to the second opening” is not illustrated in the drawings. Responding to this objection, claim 9 has been amended in order to delete the above-defined limitation. Therefore, the objection to the drawings should be withdrawn.

Claim 10 has been objected by the Examiner for usage of the conjunction “where” on line 3. Responding to the objection, claim 10 has been amended in order to replace the conjunction “where” with “when”.

Claims 1-2 and 4 to 14 are currently active in the application. By the present amendment, claims 1, 9, 10, 12 and 14 have been amended in order to better emphasize the features of the present amendment. The support for amended claims 1 and 9 can be found at least on page 8, lines 16 to 28, page 9, lines 2 to 12, and Figures 1C and 2D. No new matter is introduced by this amendment. The Examiner is respectfully requested to reconsider the present application in a view of the above amendment and following remarks.

Claims 1, 2, 5-8 and 12 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the patent to Kozel et al. (U.S. Patent 4,378,139). This rejection is respectfully traversed since the reference to Kozel et al. does not show or suggest the invention as presently claimed.

The present invention discloses a connector to which a module body such as a memory or camera module is fitted. The claimed connector is able to achieve a thinner, space-saving design compared to existing constructions and exhibits a more stable connection. In addition, the claimed structure has an advantage that the force, exerted in the direction of insertion of the module body, is not applied directly to the contact pins, thus reducing a possibility of contact pins damage.

Generally, the claimed connection structure consists of module body 22, shown in figures 1A to 1D, and connector 25, presented in figures 2A to 2D. Module body 22 has a plurality of contact pads 24 formed at a lower half portion of

each of four side faces of the module body 22. Connector 25, to which module body is fitted, is formed with an upwardly-opened chamber 25a. The side portions of a bottom 25b of the chamber 25a is suitably notched to form openings 25c, and a plurality of parallel contact pins 26 are provided on an inner side wall of the chamber 25a. Bottom part 25b of the connector 25 can be removed reducing a connection structure in thickness by an amount corresponding to the thickness of the removed bottom 25b. Each of the contact pins 26 is bent into a generally inverted V-shape and secured to the inner side wall of the chamber 25a. One end portion of the contact pin 26 is formed into a terminal 26a which is exposed to the outer side face of the connector, and is bent outwardly horizontally so as to be electrically connected with, for example, a circuit formed on a wiring board on which the connector 25 is mounted. The opposite end of the contact pin 26b is bent to project inwardly to form a contact projection 26b for contact with the associated contact pad 24 of the module body 22. When module body 22 is inserted into the chamber 25a from the upper side of the connector 25, the contact pads 24 are brought into press-contact with the contact projections 26b of the contact pins 26 establishing electrical contact.

The reference to Kozel et al. discloses a chip carrier socket 10 with opened aperture which defines and surrounds a space for receiving a chip carrier 20. A plurality of elongated contacts 25 are carried by the frame and a chip carrier has also contacts 26. When a chip carrier 20 is inserted into the frame, the resilience provided between the connection of contacts 25 and 26, such way that bent contact 25 is presses into contact 26. The shape of frame contacts 25 and a chip carrier contacts 26 is shown in Figures 2 and 3 of the Kozel et al. The frame contact 25 is an elongated contact specifically made of convoluted, linear metal strips which reside in slots 24 separated by inner plastic ribs 23. The chip carrier contacts 26 are also a convoluted linear metal strip which comes into contact with a frame contact 25. The Examiner states the reference to Kozel et al. shows all limitations of the present invention.

Applicant respectfully disagrees and directs the Examiner's attention to the

fact that according to the present invention the contacts 24, provided in a module body, are just contact pads and contacts on the inner side face of the connector are contact pins 26. Therefore, when the camera module 21 is inserted into the chamber 25a from the upper side of this connector 25, the contact pads 24 are brought into press-contact with the contact projections 26b of the contact pins 26, as it is shown in Figure 3 of the present application. Such a connection provides more sturdy and reliable connection and provides less possibilities for contact braking in comparison with the connection shown by Kozel et al.

In order to emphasize the distinction claims 1 and 9 have been amended. Specifically, claim 1 now recites, “...a first conductive member, provided on an outer periphery of the module body which is opposed to the inner side face of the connector in a case where the module body is accommodated in the chamber;

a second conductive member, comprising a plurality of parallel contact pins each bent into a generally inverted V-shape, fully located within said connector ...”.
(emphasis added)

As amended it is respectfully submitted that claims 1 and 9 clearly define over the patent to Kozel et al. The rest of the rejected claims directly or indirectly depend from claims 1 and 9 and therefore are also allowable.

On page 4 of the Office Action the Examiner states that, “... Kozel et al. discloses the invention substantially as claimed except for the shape of the second conductive member being an inverted V-shaped.” Relying on case *In re Dailey* (149 USPQ 47), the Examiner further states that it would be obvious for the person skilled in the art to modify the conductive members with different type configurations “since applicants have presented no explanation that this particular configuration of the pin is significant.” The Applicant completely disagrees. First of all, the fact that the claimed shape of the contact pins is advantageous is shown well when analyses of prior art is provided. In the Background of the Invention it is shown very clearly why the Applicant has chosen the claimed shape.

Additionally, the reasons why the inverted V-shape pin is advantageous is also presented on page 9 of the specification. Second, the fact of usage of an inverted

V-shape pins is not obvious since no prior art shows the identical shape pins. In the same time, the specification very clearly shows that this particular shape of contacts provides compact and sturdy connection compared with existing connectors.

In order to emphasize the distinction claims 1 and 9 have been amended in order to include more detailed descriptions of the first and second conductive members. Additionally, claims 12 and 14 have been expanded to claim in greater details a second V- shaped conductive member.

Claims 9 to 11 and 14 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the patent to Kozel et al. in view of Griffin et al. (U. S. Patent 4,378,139). This rejection is respectfully traversed.

The reference to Kozel et al. has been distinguished above. The Examiner relied on patent to Griffin et al. since the primary reference to Kozel et al. does not show the first and second openings having the same shape and dimensions nor the chamber having a columnar through hole penetrating from the first and second openings. Since the Examiner objected this feature as not supported by illustrations, claim 9 has been amended to cancel the limitation, "...the chamber is shaped as a columnar through hole penetrating from the first opening to the second opening." Therefore, this rejection is moot in a view of the above amendment.

Claim 4 has been rejected under 35 U.S.C. §103(a) as being unpatentable over the patent to Kozel et al. in view of Elberbaum (U.S. Patent 6,268,882). This rejection is respectfully traversed.

The reference to Kozel et al. has been distinguished above. The Examiner relied on patent to Elberbaum as disclosing a module body being a camera. However, since claim 4 is dependent from the currently amended claim 1 this rejection is moot. The reference, to Elberbaum does not make up for the deficiencies of Kozel et al. The Examiner is respectfully requested to withdraw this rejection.

For the reasons advanced, it is submitted that as amended claims 1, 2 and 4 to 14 clearly define over the prior art relied on by the Examiner. The prior art cited

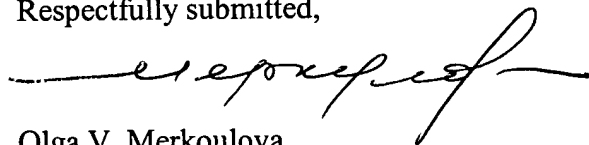
but not relied on by the Examiner has been reviewed, but for the reasons already advanced, that prior art is similarly not relevant to the invention as now claimed.

In view of the foregoing, it is respectfully requested that the application be reconsidered, that claims 1, 2 and 4 to 14 be allowed, and that the application be passed to issue.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

A provisional petition is hereby made for any extension of time necessary for the continued pendency during the life of this application. Please charge any fees for such provisional petition and any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041 (Whitham, Curtis & Christofferson, P.C.).

Respectfully submitted,



Olga V. Merkoulouva
Reg. No. 48 757

Whitham, Curtis & Christofferson, P.C.
11491 Sunset Hills Road, Suite 340
Reston, VA 20190
Tel. (703) 787-9400
Fax. (703) 787-7557
Customer No.: 30 743